

24 September 1970

TSG/RED
FY-71 R&D Budget Schedule by Month

July

PROJECT

C-in-S HPSC
Imagery Experimentation Support
C-in-S Engineering Consultation
Services
Color Training Split Funding
Special Studies & Photogrammetric
Analysis Support
 (Personal Services

TYPE

Follow-on
Follow-on
Follow-on
New
Follow-on

25X1

August

PROJECT

Imagery Interpretation Research
Program
Scan & Search PT Station

TYPE

Follow-on
Follow-on

25X1

September

PROJECT

Precision Sensitometric Processor
Development
B&W Dry Silver Photo Reproduction
Materials Development
Automated PIR Production System
Development
Automated Briefing Board
Feasibility Study

TYPE

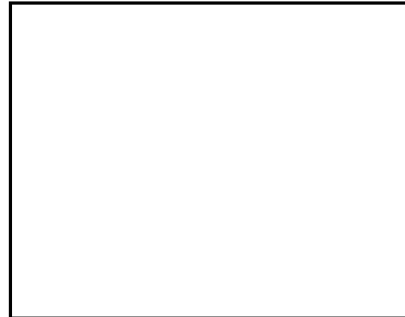
New
Follow-on
New
New

25X1

October

PROJECT

Lenticular RPV Screen Development
Collateral Information Viewer
Development
Color Control Cell
Photoscience Support



TYPE

25X1

Follow-on
New

New
Follow-on

November

PROJECT

Colorimeter Target Development
Photochemistry Consultation
Wet Photo Processing Research



TYPE

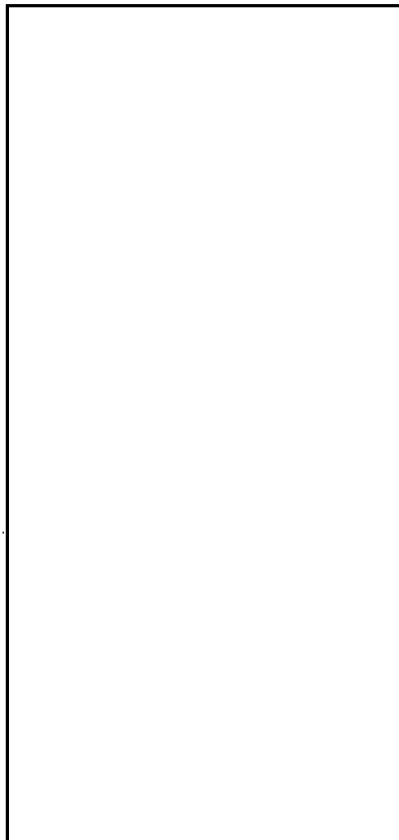
25X1

New
New
New

December

PROJECT

EOI Exploitation Concepts Valid
Study
Color Density Development
Subjective Color Image Quality
Assessment Study
Color Imagery Intelligence
Value Study
1540 High Magnification Light-Source
Development
Colorimeter
Automated Stereogram Printer
Development
Frame Counter
Electronic Cloud Screener
Color Imagery Interpretation
Instrument Study
Chemical Image Manipulation Study
Digital Image Manipulation
Systems Development
RIPPS Dry Diazo Modifications
Non-Computerized Information
Handling Study



TYPE

25X1

New

New
New

New

New

New
New

New
New
New

New
Follow-on

New
New

January

PROJECT

TYPE

25X1

B&W Image Quality Evaluation
System Development
Film Color Stability Study
EOI Related Phosphor Screen
Materials Study
Optical Image Manipulation
System Development
Dry Processed Color Reproduction
Materials Development
Automatic New Activity Detector
Development
Unconventional Photographic Repro-
duction Materials Data Base
Hybrid Image Manipulation System
Development
Color Image Quality Evaluation
System Development
Compact, High Speed Dry Silver
Processor Development
Optical Equipment MTF/OTF Analyzer
Optical Equipment Test Kit Development

New
New
New
Follow-on
New
Follow-on
Follow-on
New
Follow-on
Follow-on
New

February

PROJECT

TYPE

25X1

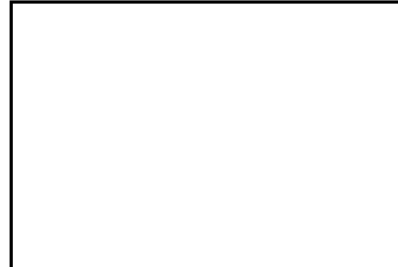
DIM Modulation Transfer Study
Image Evaluation Manipulation
Science Support
Mensuration Equipment Design
Improvement Study
Scanning RFL Illumination
System Study
Comparator Variable Density
Reticle Study
1540 Dual Viewing Light Table
EOI Data Storage Study
Exploitation Systems Vibration
Elimination Study

Follow-on
Follow-on
New
New
New
Follow-on

March

PROJECT

Calibration Device for HPSC
Line Scan Display Exploitation
System Analysis



TYPE

25X1

Follow-on
New

April

PROJECT

none

PRIORITY I
& II AMOUNT

none

PRIORITY
I ONLY

none

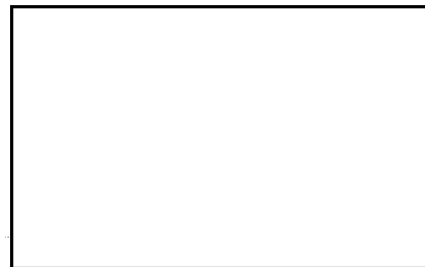
TYPE

none

May

PROJECT

S&R Printer
9-System Film Data Block Reader
Viewing Systems Study



TYPE

25X1

Follow-on

Follow-on

SECRET

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

AUGUST 1970

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|---|---------------|-------------|
| Stereo Acuity Test Development | | New |
| Automated PIR Production System Development | | New |
| B&W Dry Silver Photo Reproduction Materials Development | | Follow-on |
| Special Collection Systems Studies Support | | Follow-on |
| Imagery Interpretation Research | | Follow-on |
| Color Training Program Development | | Follow-on |
| Viewing Equipment Development Support | | New |
| Color Imagery Interpretation Performance Analysis | | New |
| In-House Psychophysics Research Support | | Follow-on |
| Imagery Interpretation Research SOA Review | | Follow-on |
| Manipulated Imagery Intelligence Value Study | | New |
| Subjective Color Image Quality Assessment Study | | New |
| PI Search Improvement Program | | New |
| T-System Mensuration Accuracy Analysis | | New |
| Target Recognition Training Program Development | | Follow-on |

25X1

SEPTEMBER 1970

| <u>PROJECT NAME</u> | | <u>TYPE</u> |
|---|--|-------------|
| Precision Sensitometric Processor Development | | New |
| Lenticular Rear Projection Screen Development | | Follow-on |
| Wet Photo Processing Research | | New |

25X1

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

~~SECRET~~OCTOBER 1970

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|--|---------------|-------------|
| Color Photo Reproduction Analyzer Development | | New |
| Photo Science Support | | Follow-on |
| 1540 High Mangification Light Source Development | | New |
| Color Control Cell (CCC) Development | | New |
| Image Evaluation/Manipulation Scientific Support | | Follow-on |
| Automatic New Activity Detector | | New |
| Development | | |

25X1

NOVEMBER 1970

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|---|---------------|-------------|
| EOI Exploitation Concepts Validation Study | | New |
| RIPPS Dry-Diazo Modifications | | New |
| Digital Image Manipulation (DIM) System Development | | Follow-on |
| Automated Briefing Board Maker Feasibility Study | | New |
| Non-Computerized Information Handling Study | | New |
| | | |

25X1

DECEMBER 1970

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|---|---------------|-------------|
| Sensitometric Heat Processor Development | | New |
| Photochemistry Consultation | | Follow-on |
| Dry Processed Color Reproduction Material Development | | New |
| Color Imagery Interpretation Instrumentation Study | | New |
| Electronic Cloud Screener Development | | Follow-on |
| | | |

25X1

~~SECRET~~

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

JANUARY 1971

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|---|---------------|-------------|
| Exploitation Systems Vibration Elimination Study | | Follow-on |
| Optical Equipment Test Kit Development | | New |
| Automated Stereogram Printer Development | | Follow-on |
| Line Scan Display Exploitation Systems Analysis | | New |
| B&W Image Quality Evaluation System Development | | New |
| EOI Data Storage Study | | New |

25X1

FEBRUARY 1971

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|--|---------------|-------------|
| Film Color Stability Study | | New |
| Hybrid Image Manipulation (OIM/DIM) System Development | | New |
| Compact High Speed 9 1/2", Dry Silver Processor Development | | Follow-on |
| 1540 Dual Viewing Light Table Development | | New |
| 15X WF Zoom 240 Eyepiece Development | | New |
| Automated Film Transport Systems Survey | | New |
| Comparator Variable Density Reticle Development | | New |
| Chemical Image Manipulation Study | | New |

25X1

MARCH 1971

| <u>PROJECT NAME</u> | <u>AMOUNT</u> | <u>TYPE</u> |
|---|---------------|-------------|
| Mensuration Equipment Design Improvement Study | | Follow-on |
| Unconventional Photographic Reproduction Materials Data Base | | Follow-on |

25X1

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

APRIL 1971

PROJECT NAME

AMOUNT

TYPE

Color Densitometer Development
Optical Image Manipulation (OIM)
System Development

New
Follow-on

25X1

MAY 1971

HPSC Calibration Device
Step and Repeat Contact
Printer Development
Viewing Systems Technology
Handbook
Simulated Imagery Computer
Program Modification

Follow-on
Follow-on
Follow-on
Follow-on

JUNE 1971

PROJECT NAME

A

TYPE

Color Image Quality Evaluation
System Development

New

SECRET

SECRET

I. IMAGERY INTERPRETATION PROCESSES

| <u>Title</u> | <u>Status</u> | <u>Est. Date of Completion</u> |
|---|--|--------------------------------|
| Ground Order of Battle Resolution Study | Follow-on contract has been signed off | Jan. 71 |
| Imagery Experimentation Support | FY-71 follow-on contract has been approved | July 70 |
| Imagery Interpretation Research Program | Final reports due Sept 70. Follow-on contract being processed. | Sept. 70 |



25X1

| | | |
|--------------------------------|---|----------|
| Simulated Imagery Program | Program extended 5 months, additional time might be required. | Sept. 70 |
| Visual Perception Consultation | Follow-on contract in process | June 70 |

III. IMAGE ANALYSIS AND MANIPULATION

| | | |
|--|--|-------------------------|
| Digital Image Manipulation | 10 Aug Milestone on schedule at Patrick AFB | Nov 70 |
| IDT Computer Display System | 3 month delay. Additional slippage possible | Aug 70 (incl. 3 months) |
| National Bureau of Standards | Draft Proposal received. FY-71 under consideration | June 70 |
| Optical Image Manipulation | On schedule | April 71 |
| Power Spectral Density Quality Measure | On schedule | April 71 |
| Scientific Backup in Physical Optics | Closed out | May 70 |

SECRET

| | | |
|--|-------------|--------|
| Signal to Noise Optimization Technique | On schedule | Nov 70 |
|--|-------------|--------|

| | | |
|---|-------------|--------|
| Technical Support Services in Photo Science | On schedule | Nov 70 |
|---|-------------|--------|

IV. IMAGE INTERPRETATION INSTRUMENTS AND TECHNIQUES

| | | |
|-----------------------------------|---|----------|
| Advanced Stereo Rhomboid Model II | Prototype returned to contractor for minor rework | Sept. 70 |
|-----------------------------------|---|----------|

| | | |
|-----------------------------------|---|--|
| Automatic Stereo Scanner Phase II | Under Stop Work Order, being packed for shipment | |
|-----------------------------------|---|--|

25X1

| | | |
|-------------------------------------|---|--|
| Automatic Stereo Scanner Evaluation | Under negotiation. Resume work 22 July NPIC coordination 29 July-14 Aug | Phase I - May 71 Phase II - Dec. 71 |
|-------------------------------------|---|--|

| | | |
|----------------------------------|-------------|---------|
| Stereo Scanner Engineering Audit | On schedule | Dec. 70 |
|----------------------------------|-------------|---------|

| | | |
|------------------------------|--|---------|
| Automatic Target Recognition | On schedule. TID delivery Sept. 70. Electronic clue extractor, contract ends Dec 70. | Dec. 70 |
|------------------------------|--|---------|

| | | |
|--|---|--------|
| Chip System Implementation Investigation | Six month delay due to clearance problems. First report being printed | Dec 70 |
|--|---|--------|

| | | |
|---------------------------------|-----------------------------|-------------------------|
| High Precision Stereocomparator | 2 month delay NPIC T&E comp | Dec 70 - deliv. June 71 |
|---------------------------------|-----------------------------|-------------------------|

| | | |
|-----------------------------------|--|---------|
| Image Comparison Microstereoscope | Stop work status. Overrun request of submitted. Restart in Aug. | Jan. 71 |
|-----------------------------------|--|---------|

25X1

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

| | | |
|---|---|-----------------------------------|
| Light Source Study | On schedule | Sept. 70 |
| Scan & Search PI Station | On schedule. Design completed, drawings due in Aug, fabrication contract signed | Dec. 71 |
| Split Format 1540 Light Table - <input type="checkbox"/> | R&D complete | Production on order |
| Split Format 1540 Light Table - <input type="checkbox"/> | Prototype returned to manufacturer for work. Manuals and report required. | Oct. 70 |
| UV Rear Projection Viewer Phase II | On schedule Phase II begun | July 70 |
| Wide Field Filar Eyepiece | Under evaluation (contract complete upon receipt of drawings) | Prototype received March 70 |

V. REPRODUCTION

| | | |
|--|---|----------------------------|
| <input type="checkbox"/> | On schedule. Proposal for follow-on under evaluation | Complete |
| Dry Silver Material for High Speed Processor | On schedule. Will extend through June 71 | June 71 |
| Dry Process Photo Study | On schedule | July 70 (to be renewed) |
| Improvement of Processor Enlarger Fluid Injector <input type="checkbox"/> | | Complete |
| Consultation to Improve Production Methods <input type="checkbox"/> | | Complete |
| Stereogram Printer Optical Feasibility Study | Complete, final report received, results input to proposed FY-71 program | Received 15 July |

SECRET

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

Grant Program in Photoscience

Complete

Physical Color Standards

On schedule

April 71

VII. TEST & EVALUATION

Services & Repairs of
Electronic Equipment

Complete

25X1

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030001-4

(SECRET)

Task Narratives - Work Copy

I-1.a Color Evaluation

I.1.a A study to determine the intelligence significance of color characteristics of targets. It will determine the relationship, if any, of color signatures on imagery to the identification and analysis of specific target types. Any resultant color signatures would be compiled into a key for use by interpreters. The technical risk is fairly low since even negative findings would be beneficial. Since all possible targets cannot be studied with the funds available, a follow-on effort should be funded in FY-71.

I-2.a Ground Order of Battle (Phase II)

This project is designed to determine the object dimensions which must be recorded and reproduced in order to provide the PI with an interpretable image. The data, obtained from psychophysical experiments, will be used in the design of new systems and in the specification of reproduction criteria for existing ones. The results will not directly affect operations; however, they will minimize the chances of over-engineering the systems, while establishing guidelines as to the limiting image size that may be interpreted

(SECRET)

and/or measured with confidence. This program is a follow-on to a FY-69 study using models. Experience has shown that experiments for various target types are necessary. Technical risks are minimal.

I-2.b Naval Order of Battle

Same as above. Follow-on to above, but using a different class of target.

II-1.a Image Analysis Support

The purpose of this contract is to obtain technical support for current and projected in-house research programs for the Exploratory Laboratory. It will be used to obtain guidance from qualified scientists to help the Laboratory set up these programs: analog image restoration, spatial filtering, determination of the quality of the dupe positive and to give advice on other specialized projects as necessary. This is vital to the operation of the Center and it will have a direct impact on the current investigation on dual gamma viscous processing. There is little or no technical risk involved. This is a follow-on to a current program initiated in FY 69. It is expected that it will be continued in FY 71.

(SECRET)

(SECRET (

II-2.a Photo Science Support

Provide technical support and back-up in the field of photographic science with emphasis on photo quality evaluation procedures. These results will be used to enhance current evaluation procedures and techniques. Hopefully these up-to-date techniques will improve quality of the evaluations with a resulting increase in efficiency. This effort is a follow-on to an existing contract and it is envisioned that a further continuation may be warranted.

II-3.a MTF/OTF Analyzer

An instrument, preferably easily portable, to aid the contract monitor and T&E personnel to determine the quality and performance of optical systems. It would be useful during field pre-acceptance testing and during in-house testing and evaluation of the majority of exploitation instruments developed by the Center. This has been attempted once before with indifferent success. However, development of such an analyzer is theoretically possible and industry appears to be reasonably confident of success. A limited number of the instruments would be developed for use.

(SECRET)

II-4.a Digital Image Restoration

An investigation of digital image restoration techniques. Specific attention is being paid to the applicability of these techniques to the problems of image motion, defocus, and atmospheric attenuation. Once a capability for performing restoration of imagery degraded by the aforementioned causes, has been demonstrated these techniques will be applied to specific targets about which the P.I.'s need the most information possible. It will have a capability for diagnosing some operational problems; hence, minor correction to future missions might be made based on data from a DIR analysis. P.I. readout might be delayed for a day or two while digital restoration techniques are being applied (depending on the workload, of course). The technical risk is that these techniques might not be applicable at high spatial frequencies which is exactly where the techniques would be most needed. This contract is a follow-on. This contract will (should) have a follow-on.

SECRET

- III-1.a Chip System Implementation (Phase II) Installation of equipment, check-out and operation of the Chip system resulting from the FY-69 Chip R&D Investigation. If implemented, will have a profound effect upon Center operations. Technical risk is medium. Possible follow-on in Storage and Retrieval, transmission systems, etc.
- III-2.a Rapid Display Size Typesetter Develop equipment to rapidly typeset display size type up to 72 point size in lengths of three feet or longer. To be used by Reprographics for reports, briefing boards, etc. Risk-low, 1 or 2 production models as follow-ons.
- III-2.b Automated Reporting System Develop techniques and equipment to speed the reporting process of initial entry, editing, graphics and approval. Risk-medium. To be used by IEG, PSG, TSSG, PPBS. Follow-on required. Used to transmit info between buildings.
- III-2.c Automated Print Ordering System This effort consists of a feasibility study with a contingent hardware-software development phase. The system will provide a method whereby photographic printing services can be ordered via a teletype tied to a computer which would automatically assign a requisition number, order the appropriate negative roll, print an identification frisket, and slew the enlarger to the appropriate area of the negative.

III-2.c Automated Print Ordering System
(Continued)

Such a system will speed up the ordering/printing process
& reduce errors.

III-3.a Mensuration Graphics Plotter

Develop equipment to rapidly plot out the rectified dimensions of a target or site as the objects are measured. Photogrammetrist can provide a plot or engineering type drawing when he submits the measurements.

III-3.b Viewgraph Generator

Develop equipment to rapidly produce viewgraphs. Equipment should have 4:1:4 reduction, enlargement capability. Used Reprographics. Risk-medium. No follow-on.

25X1

III-5.a Facsimile Transmission System

Develop equipment to transmit textual and pictorial information with at least 20 lines per millimeter resolution. Develop means for rapid development of transmitted material. Risk-medium. Follow-on. Several production units.

IV-1.a Dry Silver Material Research

This program is a continuation of a research effort for the development of a reproduction quality positive acting film. It is intended to be used in the photo lab for positive to positive or negative to negative acting reproduction film base material. Also for direct reproduction of filmed materials by the PI and library. There is fair development risk involved in that sensitivity of low gamma materials to temperature variations will require considerable effort to overcome. This follow-on development is a natural outgrowth of dry silver materials and if perfected will probably result in a single, combined, dual acting material which can be either positive or negative acting, depending on processing variations.

IV-2.a Modification of Diazo Printer to ☐ Material

This program will modify and retrofit present ☐ diazo light tables to use non-toxic dry process materials. It is intended as an improvement modification of the current PI chip print-out devices and will entail minimum risks. There will probably be additional improvements after the initial retrofit.

25X1

IV-2.b Compact High Speed Roll Film and
Paper Processor

A high speed processor specifically designed to accommodate heat processed dry silver and dry diazo paper and film in roll form. This instrument will be used in the NPIC photo lab for processing reproduction materials. This is a relatively low risk item; primary problems will be evenness of processing, degree of control and possible tracking problems. The concept is a follow-on to a current AF project (9 foot high processor) with probability of future follow-on and product improvement.

IV-2.c Enlarger/Reader/Printer

A reader/printer which produces an enlarged image and/or an enlarged paper print instantly, under room lighting conditions, using dry silver print-out material. It is P.I. oriented for blow-up annotations, graphic displays and print-out enlargements from microfilm, microfiche, aperture cards, etc. The design will be a modification of a U.S. Navy development of this concept and will probably be followed by product improvement designs after initial phase.

SECRET

W-3.a Automatic Stereogram Printer

This program will investigate the feasibility of automatically printing stereograms. Under the ASSP correlation circuitry has been designed which will match stereo images. Computer programs to provide X, Y, O are also developed. Associated problems are anticipated in the optics (20 mm size maximum) and mechanical areas, making the risk fairly high. If successful, product improvement phase will probably follow.

25X1

V-2.e Extended UV Light Source

A source to illuminate a large area such as the surface of a light table. The fluorescent and reradiating surface would substantially decrease gradients in light intensity over the viewing surface--a problem in present light tables. Theoretically, it should be possible to achieve

(SECRET)

V-2.a Extended UV Light Source
(Continued)

3000 ft.-lamberts with a spacing of 6 inches between source and illuminated surface. However, if there is a limit or an asymptote to the theory, with respect to UV, is unknown. This is a new project; if successful, it would have application to all future light tables.

25X1



V-2.c Gas Plasma Display Feasibility Study

A gas plasma display is a transparent glass sandwich with addressable illumination sources. By placing this sandwich over a high intensity cold cathode light source, it may be possible to back light a photographic film and at the same time, after proper registration, highlight

(SECRET)

V-2.c Gas Plasma Display Feasibility Study
(Continued)

specific areas of the imagery cuing the P. I. This study will determine the feasibility of this approach as an aid to the P.I. and an output for the IIS. The study will not effect the NPIC operation, but if the concept proves valid and is implemented it may speed the interpretation process and increase the number of targets reported out. The Gas Plasma Display system has not worked in larger than 4" x 4" areas, however, four large corporations are attacking this problem from different aspects and a breakthrough is imminent. Depending on the outcome of the study, a production run of appropriate equipment may follow.

V-3.a Negative to Positive Film Viewer
Breadboard

This project is for the development of a breadboard viewer specially configured to view negatives so that they will appear as positives. Its primary usefulness would be for viewing negatives to make sure that there has been no loss in information content during the printing of the duplicate positive. The primary advantage of this viewer would be maximum information content being extracted from the film. The technical risk is average.

V-3.a Negative to Positive Film Viewer
Breadboard (Continued)

This contract will result in a breadboard and feasibility demonstration. If the breadboard is successful a prototype follow-on would result.

V-4.a Scan & Search P.I. Station
(Feasibility Phase)

This would be a follow-on of the design phase planned for FY-69. This project would be to fabricate, test and install one complete prototype based on the design study of Phase I. The technical risk is moderate because a complex projection system has to be designed and proven; however, the optical system would not be as complex as those on the Automatic Stereo Scanner or the High Precision Comparator now under development.

V-5.a Automated Film Loading & Threading
Study

A design study to seek improved techniques of loading film on light tables and/or rear projection viewers. After the best technique has been defined, engineering drawings will be made for use by the Center in developing new equipment or modifying existing equipment. The technical risk is average.

V-5.b Low Power Optics for Zoom 240

This project would provide a low-power objective for the Zoom 240 when used in the monoscopic mode. It will increase the field of view by reducing magnification. It will be used in scanning photography. It should increase the speed of scanning by permitting the P.I. view of a larger area at one time. It is well within the state-of-the-art and is not technically risky. It will provide a $\frac{1}{2}X$ objective for the Zoom 240, similar to the $\frac{1}{2}X$ objective that we currently have for the Zoom 70.

V-5.c Low Power Optics for Wide-Field Stereoviewer

The lowest power objective that we now have for the Wide-Field Stereoviewer is 10X. This project would be to develop a 5X objective for the system, thereby further increasing the field of view. This objective would be primarily used for very large scale photography, such as that resulting from the "10." It should make detailed interpretation of the "10" more efficient. The technical risk is moderate. The item is not a follow-on, but should result in an operational prototype and subsequent production units.

SECRET

V-5.d Measuring Eyepiece For Wide-Field Stereoviewer

This project covers the development of a filar eyepiece for the Wide-Field Stereoviewer. This would be similar to the filar eyepiece currently under development for the [] High Power. The device would be utilized for measuring small images on the photography. The technical risk is high, primarily because of the complex nature of the eyepiece on this ultra-sophisticated instrument. The item has been specifically requested by IEG.

25X1

VI-1.a Basic Research in Precise Mensuration

Literature search, breadboarding, and experimentation to determine and analyze the factors contributing errors in mensuration. The information will be used to produce new, and improve present, equipment and techniques. This will be a 3-year level of effort. []

25X1

VI-3.a New Measuring System for [] Dual Screen Measuring Projector

Update the measuring system by replacing the existing [] equipment with [] liner incremental encoders, together with the associated direction logic, counters, readout equipment and cables. This will increase the reliability of the instrument and prolong its useful lifespan. Low risk. Product improvement effort.

25X1

VI-3.b Dual Viewing Comparator

Modify a Comparator to allow two people to view 25X1 at the same time. This will enable the P.I. and Photogrammetrist to view targets and agree on printing and edges of objects. If successful, there will probably be a follow-on.

VII-2.a Sensitometric Processor

This test equipment is designed specifically for precise, controlled processing of heat processed materials. It 25X1 is intended as a special tool to be used for test and evaluation of the various heat processed materials. There is some associated risk due to newness of the products and knowledge in this area. The equipment would be similar to or a modification of an Air Force special processor. Probably no follow-on.

VII-3.a Improved Resolution Targets

This project covers the development of superior resolution targets of both high and low contrast. The targets would be specially engineered to make the reading of them less subjective. A modified Landolt C approach is anticipated. These targets should result in more consistent readings between observers. The project is not a follow-on but a new development.

VIII-4.a Standard Test Procedures

Specification of the parameters during the development of new equipment is often difficult because it is not known exactly what, how, and how much to specify. This is a project to determine the parameters, ranges, units, formats for specification of, and instrumentation for, testing the technical requirements of exploitation equipment. The project will make technical specifications for developments a more exact science. This is a new project and no follow-on is expected.

VIII-1.a Real Time Exploitation Systems Study

Phase I is a functional analysis of real-time exploitation to determine the various R&D options which NPIC might pursue to prepare for a real-time reconnaissance system. These R&D options would be based upon engineering options regarding the parameters of the collection system and upon policy options regarding the various role(s) which might be assigned to the exploitation ground station. Phase II is for conceptual designs of real-time exploitation and will be based on the functional analysis of real-time exploitation. This phase will result in designs of displays, storage and retrieval systems, optical aids, computer requirements, image manipulation devices,

VIII-1.a Real Time Exploitation Systems
Study (Continued)

reporting consoles, etc. This design study will also analyze space and personnel requirements. This risk is unknown at present.

VIII-1.b Real-Time Display Research

A basic study to first, determine the state-of-the-art of dynamic displays suitable for image interpretation and supporting functions and second, to determine the nature and scope of improvements required for optimum displays. A follow-on effort is probable. The risk, however, of this first effort is low.

| PROJECT/PROGRAM | COST | REMARKS |
|-------------------------------------|----------------------|---|
| 25X1 Automatic Target Recognition | <input type="text"/> | This FY-71 project is money applied against modifications of a prototype Automatic Target Indexing Device developed under FY-69 funding. It is anticipated that these modifications will make an experimental prototype into an operational piece of equipment. It is anticipated that this equipment could come to operational use by 1972. A small portion (approximately 20%) of this funding is directed toward maintaining some fundamental and applied research in the general category of Automatic Target Recognition. This involves laying the technical ground work towards future research and development in the areas of automatic change detection and automatic target classification. |
| 25X1 PI Correlated Stereogram Maker | <input type="text"/> | This is a program we anticipate starting in FY-70 with an initial feasibility study. This FY-71 funding would cover the engineering design and breadboarding of this equipment which could result in a prototype by late 1972 or early 1973. Additional funding of from <input type="text"/> will be required during the later fabrication stages. This is an expensive development but the final product would justify this expenditure because it will be instrumental in eliminating large numbers of highly sophisticated and very expensive viewing instruments. 25X1 |

| PROJECT/PROGRAM | COST | REMARKS |
|---|------|---|
| 25X1 Ultra-Vilot Rear Projection Viewer | | This FY-71 funding covers the final development of an operational prototype the design of which was started in FY-70. It is anticipated this will result in prototype viewer by 1971 and could culminate in production units by late 1972. |
| Imagery Interpretation Research | | This effort is fundamental to establishing the technological base for the majority of our other research and development efforts. It is anticipated that it will be a continuing program at about this same general level of effort. The final products of this research are reports and recommendations which ultimately become specifications for future developmental equipment and which result in operational changes to improve the efficiency of the Center's operations. Future work planned within this category relates to the changing situation within the Center resulting from the changing inputs resulting from future acquisition systems, changes in requirements and changing operational procedures. The results of this program are implemented as the recommendations become available and are validated. |

PROJECT/PROGRAM

COST

REMARKS

25X1

25X1

Imagery Analysis

This covers applied research and development essentially to more fully understand and comprehend the fundamental nature of the photographic analysis and its contribution to superior quality in the photographic process. It is the continuation of a state-of-the-art effort in this technical area and it is presently anticipated that the majority of funds in FY-71 will be spent in the development of specialized equipment to implement those techniques discussed under previous fiscal year funding. Special areas of concern will be digital imagery restoration and digital image manipulation.

Mensuration Equipment

This funding should result in advanced prototype measuring equipment by 1972 and 1973. This equipment will incorporate design changes obtained through our imagery interpretation research program and our Precise Measurement Studies, along with the better wide field optical systems currently under development. Future requirements cannot be anticipated at this time.

25X1

PROJECT/PROGRAM

COST

REMARKS

Dry Silver and Non-Silver Processes

This is a continuation of our FY-70 program in dry silver and non-silver reproduction processes. At this point, development should have progressed on ☐ dry silver materials to the point where we should be building prototype equipment for the utilization of both normal and reversal processed ☐ films. Funding is also included for research and equipment development in the areas of dry non-silver materials, techniques, and equipment. It is predicted that the prototype equipment could be available in 1971 and 1972 with limited production units available in late 1972 or early 1973.

25X1

25X1

Chip Storage and Retrieval

This is a continuation of an FY-70 effort and should result in prototype equipment for operational use in the 1972 through 1973 time frame. Because of the specialized nature of this equipment. The prototypes or the only pieces of equipment normally built, i.e., no follow on unless additional funding is required for the prototype.

Automatic Transport Materials

This project is a continuation of a program started in FY-70 in study form. The FY-71 funding should result in prototype equipment designed under the previous design study contract. It is anticipated that prototype equipment could be available in late 1972 or early 1973.

| PROJECT/PROGRAM | COST | REMARKS |
|---------------------------------------|------|---|
| 25X1 Precise Measurement Study | | This is a continuation of our current in-house and contractually support program established in FY-70. It should result in reports and recommendations for inclusion in future measuring and viewing equipment, with the first results appearing in 1971 and 1972 equipment developments. |
| Photo Image Manipulation Viewer Study | | This study covers the feasibility of the design of a specialized viewer which has slipped from our FY-70 schedule. It will require [redacted] additional funding in FY-72 to complete the fabrication of this hardware. A prototype could be available in late 1972. 25X1 |
| Automatic Dodging Equipment | | This funding covers the design and fabrication of operationally suitable automatic dodging equipment which would result in prototype equipment by 1972 and if successful, could result in the design and implementation of other equipments utilizing the same techniques. |
| Test and Evaluation Equipment | | This funding covers a series of smaller developments which are required in response to on-going R&D activities. These items are keyed to the developments of other individual R&D programs and as such cannot be more specifically delivered at this time. However, it can be safely stated that there will be a continuing requirement in this area. |